

WHAT IS CLAIMED IS:

1. A disk array system comprising:
 - a plurality of storage devices for storing data;
 - a storage device control unit for controlling storage of data in said plurality of storage devices;
 - a connection unit being connected with said storage device;
 - a plurality of first channel control units each having a first processor of converting file data, received through an local area network outside said disk array system itself, into block data and requiring storage of said data in said plurality of storage devices and a second processor of transferring said block data to said plurality of storage devices through said connection unit and said storage device control unit in response to said request sent from said first processor, and said plurality of first channel control units being connected with said connection unit and said local area network;
 - a shared memory for storing control information to be transferred between said plurality of first channel control units and said storage device control unit; and
 - a cache memory for temporarily saving data to be transferred between said plurality of first channel control units and said storage device control unit; and
 - wherein said second processor located in each

said plurality of first channel control units creates a plurality of storage areas for storing said block data and a processor information storage area for storing information about a processing state between said processors to be transferred among said plurality of said first processors through the use of said plurality of storage areas of said storage devices, and

said storage device control unit controls information stored in said processor information storage area into a storage area for backing up said processor information created by said plurality of storage areas of storage devices.

2. A disk array system as claimed in claim 1, wherein said first processor located in each of said plurality of first channel control units indicates storage of information about the processing status of said first processor to said second processor located in said first channel control unit provided with said first processor, and

said second processor located in said first channel control unit provided with said first processor controls storage of the information about the processing status of said first processor in said processor information storage area in response to an indication given from said first channel control unit.

3. A disk array system as claimed in claim 1, wherein said second processor located in each of said plurality of first channel control units saves said

block data in said cache memory and stores information for representing saving of said block data in said cache memory in said shared memory in response to a request given from said first processor located in said first channel control unit provided with said second processor, and

said shared memory is caused to store said information for representing saving of said block data in said cache memory under the control of said second processor located in each of said plurality of first channel control units.

4. A disk array system as claimed in claim 1, wherein said first processor located in each of said plurality of first channel control units indicates said storage device control unit to copy said information stored in said processor information storage area to the storage area for backing up said processor information, and

said storage device control unit controls a copy process in response to an indication given from said first processor.

5. A disk array system as claimed in claim 4, wherein said first processor located in each of said plurality of first channel control units reads or writes the information stored in said storage area for backing up said processor information, thereby keeping the process if the read or the write of said information stored in said processor information

storage area is disabled.

6. A disk array system as claimed in claim 1, wherein said plurality of first channel control units are classified into a plurality of cluster groups,

said processor information storage area includes a plurality of processor information storage portions, and

each different one of said plurality of processor information storage portions is allocated to the corresponding one of said plurality of cluster groups.

7. A disk array system as claimed in claim 6, wherein said plurality of first channel control units included in the first one of said plurality of cluster groups are caused to store information about the processing status between said first processors in the first one of said plurality of processor information storage portions, and

said plurality of first channel control units included in the second one of said plurality of cluster groups are caused to store information about the processing status between said first processors in the second one of said plurality of processor information storage portions.

8. A disk array system as claimed in claim 7, wherein said first processor of each of said plurality of first channel control units included in said first cluster group indicates creation of duplication of

information stored in said first processor information storage portion to said storage device control unit, and

said storage device control unit is caused to store duplication of the information stored in said first processor information storage portion in a first backup area included in said storage area for backing up said processor information in response to an indication of said first processor of said plurality of first channel control units included in said first cluster group.

9. A disk array system as claimed in claim 7, wherein said first processor included in each of said plurality of first channel control units included in the first cluster group indicates creation of duplication of the information stored in said first processor information storage portion and said second processor information storage portion to said storage device control unit, and

said storage device control unit is caused to store duplication of said information stored in said first processor information storage portion and said second processor information storage portion in a first backup area and a second backup area included in said storage area for backing up said processor information in response to an indication of said first processor of each of said first channel control units included in said first cluster group.

10. A disk array system as claimed in claim 7, further comprising a management terminal used for obtaining information about said plurality of first channel control units and said storage device control unit, and

wherein said storage device control unit is caused to store duplication of information stored in said first processor information storage portion and said second processor information storage portion in a first and a second backup areas included in said storage area for backing up said processor information.

11. A disk array system as claimed in claim 8, wherein said first processor located in each of said plurality of first channel control units included in said first cluster group reads or writes information stored in said first backup area from or to said first backup area, thereby keeping the process if the read or the write of the information stored in said first processor information storage portion is disabled.

12. A disk array system comprising:

a plurality of storage devices for storing data;

a storage device control unit for controlling storage of data in said plurality of storage devices;

a connection unit being connected with said storage device control unit;

a plurality of first channel control units each having a first processor of file data, received

through a local area network outside of said disk array system, into block data and requiring storage of said data in said plurality of storage devices and a second processor of transferring said block data to said plurality of storage devices through said connection unit and said storage device control unit in response to a request given from said first processor, and said plurality of first channel control units being connected with said connection unit and said local area network;

a shared memory for storing control information to be transferred between said plurality of first channel control unit and said storage device control unit; and

a cache memory for temporarily saving data to be transferred between said plurality of first channel control units and said storage device control unit; and

wherein said second processor located in each of said plurality of first channel control units creates a plurality of storage areas for storing said block data, a processor information storage area for storing information about the processing status between said first processors, and a software program storage area for storing a software program running on said plurality of first processors through the use of said storage areas of said plurality of storage devices; and

said first processor located in each of said plurality of first channel control units obtains a

software program stored in said software program storage area under the control of said second processor located in said first channel control unit provided with said first processor and thereby is operated.

13. A disk array system as claimed in claim 12, wherein a software program operating in said first processor located in each of said plurality of first channel control units indicates said storage device control unit to copy the information stored in said processor information storage area to a storage area for backing up said processor information, and

said storage device control unit is controlled to copy the information stored in said processor information storage area in said storage area for backing up said processor information created through the use of the storage areas of said plurality of storage devices in response to an indication given from said first processor located in each of said plurality of first channel control units.

14. A disk array system as claimed in claim 12, wherein said plurality of first channel control units are classified into a plurality of cluster groups,

said processor information storage area includes a plurality of processor information storage portions,

each of said software programs operating in said plurality of first channel control units included in said first one of said plurality of cluster groups

is operating as storing information about the processing status between first processors in a first processor information storage portion included in said plurality of processor information storage portions.

15. A disk array system as claimed in claim 12, wherein said plurality of first channel control units are classified into a plurality of cluster groups,

said processor information storage area includes a plurality of processor information storage areas, and

the information stored in said plurality of processor information storage portions is duplicated in a plurality of backup areas corresponding with said plurality of processor information storage portion at each of said plurality of cluster groups.

16. A disk array system as claimed in claim 15, which said first processor located in each of said plurality of first channel control units included in the first one of said plurality of cluster groups indicates said storage device control unit to execute duplication of said block data through said second processor located in said first channel control unit provided with said first processor, and

said storage device control unit is caused to duplicate information stored in the first one of said plurality of processor information storage portions in the first one of said plurality of backup areas in a block-by-block manner in response to an indication

given from said first processor.

17. A disk array system as claimed in claim 15, wherein said local area network provides a terminal, and

said first processor located in each of said plurality of first channel control units included in the first one of said plurality of cluster groups indicates said storage device control unit to execute said duplication in a block-by-block manner through said second processor located in said first channel control unit provided with said first processor in response to an indication given from said terminal.

18. A disk array system as claimed in claim 15, wherein said first processor located in each of said plurality of first channel control units included in the first one of said plurality of cluster groups is caused to indicate said storage device control unit to execute said duplication in a block-by-block manner through said second processor located in said first channel control unit provided with said first processor at regular intervals.

19. A disk array system as claimed in claim 15, wherein said first processor located in each of said plurality of first channel control units included in the first one of said plurality of cluster groups is caused to obtain a load state of said storage device control through said second processor located in said first channel control unit provided with said first

processor and indicates said storage device control unit to execute said duplication block by block according to the load state of said storage device control unit.

20. A disk array system as claimed in claim 15, wherein said first processor located in each of said plurality of first channel control units included in the first one of said plurality of cluster groups is caused to execute the process through the use of the information stored in said first backup area if the access to the information stored in the first one of said plurality of processor information storage portions is disabled, and, if said first processor information storage portion is newly formed, to duplicate the information stored in said first backup area in the newly formed first processor information storage portion and to execute the process through the use of the information stored in the newly formed first processor information storage portion.